

## CLAIMS

What is claimed is:

- 1    1.     A method for managing a construction project comprising:  
2           generating a computerized simulation model for the construction project  
3        representing project materials in the construction project;  
4           mapping the project materials represented in the computerized simulation model  
5        into constructible elements;  
6           determining at least one work step for each constructible element; and  
7           selecting at least one constructible element to create a work package comprising  
8        the at least one constructible element and the at least one work step for the at least one  
9        constructible element.
- 1    2.     The method of claim 1, further comprising organizing the constructible elements  
2        into construction areas in the computerized simulation model.
- 1    3.     The method of claim 1, further comprising organizing the constructible elements  
2        into construction crafts in the computerized simulation model.
- 1    4.     The method of claim 1, further comprising organizing the constructible elements  
2        into systems for testing and turnover in the computerized simulation model.
- 1    5.     The method of claim 1, further comprising prioritizing procurement of the  
2        constructible elements based on target installation dates of the constructible elements.

- 1    6.     The method of claim 1, further comprising generating a visual display of the  
2    computerized simulation model.
- 1    7.     The method of claim 1, further comprising generating an interactive three-  
2    dimensional graphical display of the computerized simulation model.
- 1    8.     The method of claim 1, wherein selecting the at least one constructible element  
2    further comprises allowing a user to point-and-click on the at least one constructible  
3    element in a visual display of the computerized simulation model to select the at least one  
4    constructible element.
- 1    9.     The method of claim 8, further comprising providing status information for the  
2    work package during creation of the work package.
- 1    10.    The method of claim 9, wherein providing status information further comprises  
2    displaying in a visual display of the computerized simulation model work that has been  
3    completed on the construction project.
- 1    11.    The method of claim 9, wherein providing status information further comprises  
2    displaying in a visual display of the computerized simulation model a time estimate for  
3    the work package.
- 4    12.    The method of claim 9, wherein providing status information further comprises  
5    displaying in a visual display of the computerized simulation model a cost estimate for  
6    the work package.

1 13. The method of claim 1, wherein the computerized simulation model is an  
2 interactive three-dimensional computerized simulation model.

1 14. The method of claim 1, further comprising sequencing a plurality of work  
2 packages for release to work crews by selecting the work packages in a visual display of  
3 the computerized simulation model via a graphical user interface.

1 15. The method of claim 1, further comprising assigning the work package to a work  
2 crew by selecting the work packages in a visual display of the computerized simulation  
3 model via a graphical user interface.

1 16. The method of claim 1, further comprising:  
2 accessing engineering data for the construction project in a database, wherein  
3 generating a computerized simulation model is based on the engineering data; and  
4 accessing manufacturing data for the construction project in an other database,  
5 wherein mapping the project materials into constructible elements is based on the  
6 manufacturing data.

1 17. A system for managing a construction project comprising:  
2 a project design module configured to generate a computerized simulation model  
3 of the construction project representing project materials in the construction project;  
4 a mapping module configured to map the project materials represented in the  
5 computerized simulation model into constructible elements;

6           a task detailing module configured to determine at least one work step for each  
7   constructible element; and  
8           a work packaging module configured to create a work package comprising at least  
9   one constructible element and the at least one work step for the at least one constructible  
10   element.

1   18.    The system of claim 17, wherein the project design model comprises a craft  
2   organization module configured to organize the constructible elements into construction  
3   crafts in the computerized simulation model.

1   19.    The system of claim 17, wherein the project design model comprises a  
2   construction area organization module configured to organize the constructible elements  
3   into construction areas in the computerized simulation model.

1   20.    The system of claim 17, wherein the project design model comprises a system  
2   organization module configured to organize the constructible elements into systems for  
3   testing and turnover in the computerized simulation model.

1   21.    The system of claim 17, further comprising a graphical user interface configured  
2   to allow a user to point-and-click on the at least one constructible element in a visual  
3   display of the computerized simulation model to select the at least one constructible  
4   element for the work package.

1   22.    The system of claim 17, wherein the work packaging module is further configured  
2   to allow a user to point-and-click on the at least one constructible element in a visual

3 display of the computerized simulation model to select the at least one constructible  
4 element for the work package.

1 23. The system of claim 22, further comprising a status module configured to provide  
2 status information for the construction project in a visual display of the computerized  
3 simulation model during creation of the work package.

1 24. The system of claim 23, wherein the status information comprises a time estimate  
2 for the work package.

1 25. The system of claim 23, wherein the status information comprises a cost estimate  
2 for the work package.

1 26. The system of claim 17, wherein the system is further configured to generate a  
2 visual display of the computerized simulation model.

1 27. The system of claim 17, wherein the system is further configured to generate an  
2 interactive three-dimensional graphical display of the computerized simulation model.

1 28. The system of claim 17, wherein the computerized simulation model is an  
2 interactive three-dimensional computerized simulation model.

1 29. The system of claim 17, wherein the work packaging module further comprises a  
2 sequencing module configured to assign a plurality of work packages to work crews and  
3 to sequence the plurality of work packages for release to work crews.

1 30. The system of claim 29, wherein the work packaging module further comprises a  
2 reprioritization module configured to reprioritize the sequence of the work packages.

1 31. The system of claim 17, wherein the work packaging module further comprises a  
2 constraints analysis module configured to determine whether the work package is valid.

1 32. The system of claim 17, wherein the work packaging module further comprises a  
2 verification module configured to analyze resource constraints for the construction  
3 project to determine whether a work crew can execute the work package subject to the  
4 constraints.

1 33. The system of claim 17, wherein the work packaging module further comprises a  
2 converter module configured to convert data accessed from an external database into a  
3 common format for use in the matching module.

1 34. A computer program product for managing a construction project comprising  
2 computer program code for performing the steps of:  
3 generating a computerized simulation model of the construction project, the  
4 computerized simulation model representing project materials in the construction project;  
5 mapping the project materials represented in the computerized simulation model  
6 into constructible elements;  
7 determining at least one work step for each constructible element; and

8           selecting at least one constructible element to create a work package comprising  
9   the at least one constructible element and the work steps for the at least one constructible  
10 element.

1   35.    The computer program product of claim 34, further comprising computer program  
2   code to generate a visual display of the computerized simulation model.

1   36.    The computer program product of claim 34, further comprising computer program  
2   code to generate an interactive three-dimensional graphical display of the computerized  
3   simulation model.

1   37.    The computer program product of claim 34, wherein the computerized simulation  
2   model is an interactive three-dimensional computerized simulation model.

1   38.    The computer program product of claim 34, further comprising computer program  
2   code to allow a user to point-and-click on the at least one constructible element in a  
3   visual display of the computerized simulation model to select the at least one  
4   constructible element.

1   39.    A system for managing a construction project comprising:  
2           means for generating a computerized simulation model of a construction project,  
3   the computerized simulation model representing project materials in the construction  
4   project;  
5           means for mapping the project materials represented in the computerized  
6   simulation model into at least one constructible element;

7 means for determining at least one work step for each constructible element; and  
8 means for creating a work package comprising the at least one constructible  
9 element and the work steps for the at least one constructible element.

1 40. The system recited in claim 39, further comprising:

2 means for generating a visual display of the computerized simulation model.